

Amendments to the Specification

Please replace the paragraph starting on page 5, line 26 and ending on page 6, line 4 with the following paragraph:

The present invention is directed to a system for use in filling or re-filling fuel supplies and can be used with a wide variety of fuel cartridges storing fuel cell fuels including methanol and water, methanol/water mixture, methanol/water mixtures of varying concentrations and pure methanol. These fuel cartridges can also contain other types of fuel cell fuels, for example ethanol, or other chemicals that may improve the performance or efficiency of fuel cells. Suitable fuel cartridges are disclosed and described in co-pending, U.S. Patent Appl. Pub. No. 2004/0151962 A1 ~~patent application~~ entitled "Fuel Cartridge for Fuel Cells," published on August 5, 2004 ~~filed on January 31, 2003, bearing serial no. 10/356,793~~, and in co-pending, commonly owned, U.S. Patent Appl. Pub. No. 2005/0023236 A1 ~~patent application~~ entitled "Fuel Cartridge with Flexible Liner," published on February 3, 2005 ~~filed on July 29, 2003, bearing serial no. 10/629,004~~. US 2004/0151962 and US 2005/0023236 publications ~~The 793 and '004 applications~~ are incorporated herein by reference in their entireties.

Please replace the paragraph on page 9, lines 3-17 with the following paragraph:

As illustrated, first fuel cartridge connector 9 is a male connector, and fuel chamber connector 20 is a female connector. Fuel flow is either by gravity or under pressure from first fuel cartridge 12 to internal fuel chamber 14. Pressure can be supplied by hand squeezing the first cartridge, when the outer casing of the cartridge is relatively flexible. To prevent undesired leakage of fuel from either first fuel cartridge 12 or internal fuel chamber 14, before first fuel cartridge connector 9 and fuel chamber

connector 20 are brought into proper contact, check valves, manual or spring-loaded closures, or other seals can be provided in both first fuel cartridge connector 9 and fuel chamber connector 20. Therefore, fuel flow from first fuel cartridge 12 to internal fuel chamber 14 is not established until first fuel cartridge connector 9 is brought into contact with fuel chamber connector 20. Such valves, valve components, seals and closures are disclosed in co-pending, commonly owned U.S. Patent Appl. Pub. No. 2005/0022883 A1 ~~patent application~~ entitled "Fuel Cartridge with Connecting Valve," published on February 3, 2005 and filed on July 29, 2003, bearing serial no. 10/629,006. ~~The '006 application~~ is incorporated herein by reference in its entirety. Optionally, the valve connection can be confirmed electronically to ensure that the valves or valve components are properly connected before fuel flow is initiated.

Please replace the paragraph on page 10, lines 4-15 with the following paragraph:

First fuel cartridge connector 9, second connector 17 and fuel chamber connector 20 can be arranged as mating, two-component valve systems, as disclosed in US 2005/0022883 ~~previously incorporated by reference the '006 application~~. Each valve component is capable of providing a seal. In one embodiment, first fuel cartridge connector 9 or second connector 17 is one half of a two-component valve, and fuel chamber connector 20 is the complementary half of the two-component valve. In addition to providing for connectivity and fluid communication between first fuel cartridge 12 and internal chamber 14, these valve halves seal first fuel cartridge 12 and internal fuel chamber 14 when not connected together. Suitable two-component valves are fully disclosed in US 2005/0022883 ~~the '006 patent application~~, discussed above. These two-component valves can be uniquely arranged so that only specific halves fit together. This uniqueness can be used to provide a method to ensure that the proper fuel

cartridges are matched to the internal fuel containers. Alternatively, the valve halves can be universal, mix-and-match type fittings.

Please replace the paragraph on page 11 lines 8-18 with the following paragraph:

Referring to Fig. 6, in one embodiment filling system 10 includes adapter 22 that provides an interface between fuel cartridge 12 and fuel chamber 14, and facilitates the transfer of fuel from fuel cartridge 12 to fuel chamber 14. Adapter 22 includes at least one input connector 24 to connect adapter 22 to fuel cartridge 12, and at least one output connector 26 to connect adapter 22 to fuel chamber 14. Input connector 24 is in fluid communication with output connector 26 through adapter 22. Various arrangements for input connector 24 and output connector 26 are possible and these connectors can either be the same type of connector or different types of connectors. Any type of connection capable of providing a sufficient attachment and seal with either fuel cartridge 12 or fuel chamber 14 can be used including press fit connections, threaded connections, union fittings and the like. Valve components disclosed in US 2005/0022883, previously incorporated above, the '006 patent application are also usable in this embodiment.

Please replace the paragraph on page 12 lines 8-22 with the following paragraph:

In another embodiment, input connector 24 is one half of a two-component valve, and fuel cartridge 12 contains the other mating half of the two-component valve. In addition to providing for connectivity and fluid communication between fuel cartridge 12 and adapter 22, these valve halves seal fuel cartridge 12 and adapter 22 when not connected together. Suitable two-component valves are fully disclosed in US 2005/0022883 the '006 patent application, discussed above. In addition to this first two-component valve between fuel cartridge 12 and adapter 22, a second similar two-component valve can be placed between adapter 22 and fuel chamber 14. Output

connector 26 is one half of the two-component valve, and connector 20 of fuel chamber 14 is the other complimentary half of the two-component valve. These valve halves can be connected to adapter 22, fuel container 14 and fuel cartridge 12 by any suitable method including press-fitting, pipe threads, adhesives and welds. In one embodiment, these two-component valves are uniquely arranged so that only specific halves fit together. This embodiment can be used to provide a method to ensure that the proper fuel containers are matched to the proper fuel cartridges. Alternatively, the valves halves are universal, mix-and-match type fittings.

Please replace the paragraph starting on page 12, line 23 and ending on page 13, line 8 with the following paragraph:

Adapter 22 can be a passive device or an active device. In one embodiment, adapter 22 is arranged as a passive device. This arrangement is suitable when used with pressurized fuel containers or when gravity feed is the preferred method of transferring fuel to fuel chamber 14. When adapter 22 is passive, input connector 24 and output connector 26 are in direct fluid connection through micro-channel sized piping 34 (Fig. 6) that passes through adapter 22. In order to provide for the ability to control or stop the flow of fuel through adapter 22, adapter 22 can include one or more valves 36 disposed between input connector 24 and output connector 26. Valves 36 can be arranged to simply provide an on-off function or can be arranged to restrict and control the flow and pressure of fluid through adapter 22. Suitable valves include ball valves, needle valves, three-way and four-way valves, gate valves, butterfly valves, rotary valves and check valves. In addition, valves 36 can be used alone or in combination with the two-component valves in the input and output connectors. In one embodiment, internal fuel chamber connector 20 includes check valve 37 to prevent the back-flow of fuel from

internal chamber 14 when chamber connector 20 is disengaged from adapter 22. Internal fuel chamber connector 20 or other valves, valve components or other connectors may also include a filler material to control the flow of fuel. Such filler materials are disclosed in US 2004/0151962 that was previously incorporated by reference.~~the co-pending '793 application.~~

Please replace the paragraph on page 16 lines 1-6 with the following paragraph:

Suitable logic control units include programmable logic controllers, hard-wired logic controllers and electrically erasable programmable read-only memory (EEPROM). Examples of suitable EEPROMs can be found in co-pending and co-owned U.S. Patent Appl. Pub. No. 2005/0118468 A1 ~~patent application no. _____~~, entitled "Fuel Cell Supply Including [[an]] Information Storage Device and Control System" that published on June 2, 2005 ~~filed on even date herewith. This application and is~~ incorporated herein by reference in its entirety.

Please replace the paragraph starting on page 16, line 24 and ending on page 17, line 3 with the following paragraph:

This fuel monitoring system is connected to adapter 22 and in one embodiment is completely contained within adapter 22. Suitable systems monitor information such as the back pressure from fuel chamber 14 or the cumulative amount of fuel transferred to determine when a sufficient amount of fuel has been transferred to fuel chamber 14. In this embodiment, the fuel monitoring system includes logic control unit 46. In another embodiment as illustrated in Fig. 9, the fuel monitoring system includes fuel gauge 48 connected to fuel chamber 14 to measure the amount of remaining fuel in fuel chamber 14. Examples of suitable electronically readable ~~readably~~ fuel gauges are shown in commonly owned, co-pending U.S. Patent Appl. Pub. No. 2005/0115312 A1 ~~patent~~

application no. _____, entitled "Fuel Gauge for Fuel Cartridges" that published
on June 2, 2005 and filed on even date herewith. This application is incorporated herein
by reference in its entirety. Fuel gauge 48 can be in contact with logic control unit 46
through the first and second ~~set~~ sets of electric contacts 42, 44.